DETAILED ACTION

Response to Amendment

1. In response to applicant's amendment received on 8/17/2011, all requested changes to the claims have been entered. New claim 21 has been entered.

Response to Argument

2. Applicant's arguments filed on 8/17/2011 have been fully considered but they are not persuasive.

A. Applicant's statement on page 9 of the remarks that Applicant is assuming that the "first processing way" is analogous to the "coarse scaling" and that the "second processing way" is analogous to "fine scaling" and Mutoh teaches that the "fine scaling" is simpler than the "coarse scaling".

The Examiner disagrees. "first processing way" is not analogous to the "coarse scaling". The scaling process is one of processes in the first processing way. The first processing way includes other process such as jaggy processing or an intermediate tone processing. The Mutoh described that first processing way such as that which includes a relatively high-order or not-simple processing such as a jaggy processing described above in case of size magnification, or an intermediate tone processing a

case of size reduction (para [0024]). Arithmetically, coarse scaling ($\frac{1}{8}$) is simpler than fine scaling ($\frac{80}{84}$), as described in rejection below and also described in page 7 of Applicant's remark (8/17/2011) that "first, coarse stage is simple" and this is demonstrated by the restriction of the ratio to be "1/X". In contrast, the "next stage (fine)" is "more flexible" and may include more complex ratios "Y/Z".

B. Applicant's statement on page 10 of the remarks that Mutoh teaches additional processing between the "coarse scaling" and the "fine scaling" (e.g., "Jaggy processing"). Therefore, Mutoh would not disclose or suggest "fine scaling" of "the coarse scaled image matrix", rather, Mutoh teaches "fine scaling" of a processed image which is generated by extra processing after scaling the original image.

The examiner disagrees. Claim 1's preamble is ended with "comprising", which is open ended and does not exclude additional unrecited elements or method steps. Therefore even if coarse scaled image has extra process, it is coarse scaled image. And Mutoh teaches "fine scaling" of "the coarse scaled image matrix".

C. Applicant's statement on page 11 of the remarks that Mutoh does not disclose or suggest "selecting X, Y and Z so that 1/X is approximately Y/Z" as in claim 5.

The examiner disagrees, when reduction ratio is close to 1, for example, 1.05, coarse scaling factor would be 1 and fine scaling factor would be 100/105 which is approximately 1.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

A. Claims 1, 3, 5, 6, 7, 12 and 16-20 are rejected under 35 USC 103(a) as being unpatentable over Mutoh (US 2004/0057634) in view of Matsui et al (US 5,583,989).

With respect to claim 1, Mutoh teaches receiving, from a first processor at a second processor, a coarse scaled image matrix having a coarse scaling ratio 1/X as compared to an original image matrix (Fig. 17 ref label S72, S73 and S74, para [0152]), and

fine scaling, by the second processor, the coarse scaled image matrix by using a ratio Y/Z (ZZ/Z1) to create a final image matrix having a scaling ratio R (ZZ at Fig. 17 Start) as compared to the original image matrix (Fig. 17 ref label S74 and S75); where Y <Z, the scaling ratio R corresponds approximately to an equation Y/(Z*X), and coarse

scaling is simpler than fine scaling. (The embodiment of Fig 17 of Mutoh is a size change processing such as a magnification processing and size reduction processing or so (para [0150]). In example of paragraph [0152] is magnification example. It would be easy to modify the example of Mutoh to size reduction example of same scaling factor 8.4. Then, integer size-change portion would be 8 and Z1 would be $\frac{1}{8}$.

$$R = ZZ = \frac{1}{8.4} = Z1 \cdot \frac{ZZ}{Z1} = \frac{1}{8} \cdot \frac{1/8.4}{1/8} = \frac{1}{8} \cdot \frac{8}{8.4} = \frac{1}{X} \cdot \frac{Y}{Z}$$

However, ZZ and $Z1$ of $\frac{ZZ}{Z1}$ are not integer. But it is relatively easy to construct multiplication or division by integers.

Matsui et al. teach real number is converted into a faction expressed in integer numerator and denominator (col. 4 lines 50-57).

And, it would be $\frac{1}{X} \cdot \frac{Y}{Z} = \frac{1}{8} \cdot \frac{8}{8.4} = \frac{1}{8} \cdot \frac{80}{84}$.

Also, coarse scaling ($\frac{1}{8}$) is simpler than fine scaling ($\frac{80}{84}$). And after coarse scaling, image size would be smaller, so that there requires smaller memory and computational requirement is reduced.)

At the time of the invention it would have been obvious to a person of ordinary skill in the art to substitute non integer scale factor as a ratio of integer in the method of Mutoh.

Accordingly, scale factors, even those that are not integers, can be easily applied by expressing the scale factor as a ratio of integer. It is easier to construct to divide and

then multiply by integers to arrive at the required scale factor than to do calculation that scales by a non-integer amount.

With respect to claim 3, Mutoh teach that integer X is selected to be as great as possible, according to the integers maximums selected for Y and Z and the selected scaling ratio R. (para. [0152]).

With respect to claim 5, Mutoh teach that 1/X is approximately Y/Z (para [0150] – [0152], scaling rate is close to 1, then 1/X is approximately Y/Z).

With respect to claim 6, please refer to rejection for claim 1.

With respect to claim 7, Mutoh teach in that the apparatus in integrated in connection with the image sensor of a camera (para. [0148]).

With respect to claim 12, please refer to rejection for claim 1.

With respect to claim 16, Mutoh teaches that selecting a value of the ratio 1/X for coarse scaling the original image matrix so as to reduce a memory requirement and a computational requirement when fine scaling the coarse scaled image matrix (In example of Claim 1 above, when scaling ratio is 8.4, ratio 1/x is selected as 1/8, so that

intermediate matrix is much smaller compare to original matrix, so that computational requirement when fine scaling the intermediate matrix is reduced).

With respect to claim 17, Mutoh teaches that selecting X, Y and Z so that Y/Z is greater than or equal to 1/2 and less than or equal to 1 (In example of Claim 1 above, when reduction scaling ratio is a.b, ratio 1/X is selected as 1/a, and Y/Z is a/a.b, so that Y/Z is greater than or equal to 1/2 and less than or equal to 1. see table below).

a.b	a		a/a.b
1.0	1		1
1.1	1		0.909091
1.2	1		0.833333
1.3	1		0.769231
1.4	1		0.714286
1.5	1		0.666667
1.6	1		0.625
1.7	1		0.588235
1.8	1		0.555556
1.9	1		0.526316
2.0	2		1
2.1	2		0.952381
2.2	2		0.909091
2.3	2		0.869565
2.4	2		0.833333
2.5	2		0.8
2.6	2		0.769231
2.7	2		0.740741
2.8	2		0.714286
2.9	2		0.689655
3.0	3		1
3.1	3		0.967742
3.2	3		0.9375
3.3	3		0.909091
3.4	3		0.882353
3.5	3		0.857143
3.6	3		0.833333
3.7	3		0.810811
3.8	3		0.789474
3.9	3		0.769231

4.0	4		1
4.1	4		0.97561
4.2	4		0.952381
4.3	4		0.930233
4.4	4		0.909091
4.5	4		0.888889
4.6	4		0.869565
4.7	4		0.851064
4.8	4		0.833333
4.9	4		0.816327

With respect to claim 18, Mutoh teaches that receiving, at the first processor, the original image matrix (Fig. 17; image in S72); coarse scaling the original image matrix by using the ratio 1/X to create pixels of the coarse scaled image matrix (Fig. 7; image in S74), and

sending, from the first processor to the second processor, the coarse scaled image matrix (Fig. 17 S73 to S75).

With respect to claim 19, please refer to rejection for claim 16.

With respect to claim 20, please refer to rejection for claim 17.

B. Claim 2 is rejected under 35 USC 103(a) as being unpatentable over Mutoh (US 2004/0057634) in view of Matsui et al. (US 5,583,989) and further in view of Yamaguchi (US Patent 6,424,753)

Mutoh and Matsui et al. teach all the limitations of claim 1 as applied above from which claim 2 respectively depend.

Mutoh and Matsui do not teaches expressly that the second scaling is performed, after a coarse scaling, to the pixel group calculated for the coarse scaled image matrix, without completing the calculation of the entire coarse scaled image matrix.

Yamaguchi teaches parallel processing of scaling circuit (col. 11 lines 1-8).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to process scaling process in parallel in the method of Mutoh and Matsui.

The suggestion/motivation for doing so would have been that it would speed up the processing.

Therefore, it would have been obvious to combine Yamaguchi with Mutoh and Matsui to obtain the invention as specified in claim 2.

C. Claim 4 is rejected under 35 USC 103(a) as being unpatentable over Mutoh (US 2004/0057634) in view of Matsui et al (US 5,583,989) and further in view of Kamon (US Patent 4,827,433)

Mutoh and Matsui teach all the limitations of claim 1 as applied above from which claim 4 respectively depend.

Mutoh and Matsui do not teaches expressly , in the first scaling the integer X is selected to be as greatest as possible as the power of two.

Kamon teaches in the first scaling the integer X is selected to be as greatest as possible as the power of two. (col. 29 line 61- col. 30 line 7).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to process scaling process in power of two in the method of Mutoh and Matsui.

The suggestion/motivation for doing so would have been that it would easier to calculate in power of two in computer calculation environment (binary).

Therefore, it would have been obvious to combine Kamon with Mutoh and Matsui to obtain the invention as specified in claim 4.

D. Claim 8 is rejected under 35 USC 103(a) as being unpatentable over Mutoh (US 2004/0057634) in view of Matsui et al (US 5,583,989) and further in view of Kim (US 2002/0060676)

Mutoh and Matsui teach all the limitations of claim 6 as applied above from which claim 8 respectively depend.

Mutoh and Matsui do not teach expressly that the coarse scaler is integrated in connection with the image sensor of a camera and the fine scaler is integrated in the host system.

Kim teaches that the scaler is integrated in connection with the image sensor of a camera and the host system. (Fig 3).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to connect scaler to sensor and host in the appartus of Mutoh and Matsui.

The suggestion/motivation for doing so would have been that it would faster scaler with scaling image right out of sensor.

Therefore, it would have been obvious to combine Kim with Mutoh and Matsui to obtain the invention as specified in claim 8.

E. Claim 10 is rejected under 35 USC 103(a) as being unpatentable over Mutoh (US 2004/0057634) in view of Matsui et al (US 5,583,989) and further in view of Najand (US Patent 7,203,379).

Mutoh and Matsui teach all the limitations of claim 6 as applied above from which claim 10 respectively depend.

Mutoh and Matsui do not teach expressly a scaling function of at most 4 image-sensor lines for each colour component.

Najand teaches the scaling function of at most 4 image-sensor lines for each colour component. (col. 11 line 64-col. 12 line 11).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to scaling 4 line at a time in the appartus of Mutoh and Matsui.

The suggestion/motivation for doing so would have been that it would adjust scaling filter depending on buffer size.

Therefore, it would have been obvious to combine Najand with Mutoh and Matsui to obtain the invention as specified in claim 10.

F. Claim 11 is rejected under 35 USC 103(a) as being unpatentable over Mutoh (US 2004/0057634) in view of Matsui et al (US 5,583,989) and further in view of Yang et al. (US 2002/0025084).

Mutoh and Matsui teach all the limitations of claim 11 as applied above from which claim 11 respectively depend.

Mutoh and Matsui do not teach expressly the apparatus is fitted to a mobile station.

Kim teaches the apparatus is fitted to a mobile station (abstract).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to connect scaler to mobile station in the appartus of Mutoh and Matsui.

The suggestion/motivation for doing so would have been make portable image scaler.

Therefore, it would have been obvious to combine Kim with Mutoh and Matsui to obtain the invention as specified in claim 11.

G. Claims 13-15 are rejected under 35 USC 103(a) as being unpatentable over Mutoh (US 2004/0057634) in view of Akiyoshi et al. (US 2002/0154821) and Holmes et al. (US Patent 4,803,464).

With respect to claim 13, Mutoh teach all the limitations of claim 1 as applied above from which claim 13 respectively depend.

Mutoh does not teach expressly displaying an image corresponding to the coarse scaled image matrix in analog form.

Akiyoshi et al. teach displaying intermediate image (para [0236]).

And Holmes et al. teaches displaying digital image in analog display

At the time of the invention it would have been obvious to a person of ordinary skill in the art to displaying intermediate image in analog form in the method of Mutoh.

The suggestion/motivation for doing so would have been that user would have chance to view the progress of the image processing and use variety of display to show the digital image.

Therefore, it would have been obvious to combine Akiyoshi et al. and Holmes et al. with to obtain the invention as specified in claim 13.

With respect to claim 14, please refer to rejection for claim 13.

With respect to claim 15, please refer to rejection for claim 13.

H. Claim 21 is rejected under 35 USC 103(a) as being unpatentable over Mutoh (US 2004/0057634) in view of Akiyoshi et al. (US 2002/0154821).

Mutoh teach all the limitations of claim 1 as applied above from which claim 21 respectively depend.

Mutoh does not teach expressly displaying an image corresponding to the coarse scaled image matrix.

Akiyoshi et al. teach displaying intermediate image (para [0236]).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to displaying intermediate image in the method of Mutoh.

The suggestion/motivation for doing so would have been that user would have chance to view the progress of the image processing.

Therefore, it would have been obvious to combine Akiyoshi et al. with to obtain the invention as specified in claim 21.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RANDOLPH I. CHU whose telephone number is (571)270-1145. The examiner can normally be reached on Monday to Thursday from 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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